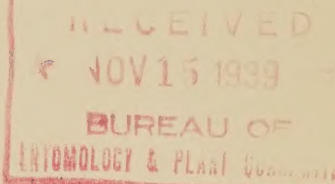


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Bureau of Entomology and Plant Quarantine



SPRAYING FOR THE MEXICAN FRUIT FLY

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In discussing the results of spraying experiments and their application to grove practice, it is desirable, first, to mention briefly something of the habits of the fruit fly. For a long time people have thought of this insect as a tropical one, native to Southern Mexico. Studies in different parts of the republic have cast considerable doubt on this assumption. The species not only survives freezing temperatures and is able subsequently to heavily infest fruit, but it is widely distributed throughout the wild land of northeastern Mexico. There it attacks a small native fruit, Sargentia greggii, belonging to the citrus family. It seems probable that the region south of the Rio Grande Valley is the insect's native home, and that when citrus was introduced into the country, especially grapefruit, which it prefers to oranges, the fly adopted the new fruit as an easily available source of food. At Santa Engracia, Tamaulipas, Mexico, where experimental work has been carried on, the adult fly appears in large numbers in the citrus groves in the fall and early winter.

In attempting grove control, therefore, it seems obvious that if the fall and early winter population could be killed by spraying,

not only would the primary infestation be largely eliminated, but subsequent grove emergence would also be reduced.

In a series of experiments carried out at Santa Engracia, in grapefruit and orange groves where the infestation of fruit fly was very heavy, excellent results were obtained by spraying the trees with a spray consisting of tartar emetic four pounds, granulated sugar 20 pounds, and water to make 100 gallons of solution. This solution was applied at as regular intervals as possible at the rate of 30 gallons to 100 medium sized trees or 0.3 gallons per tree, in the form of a fine mist to give general coverage of the foliage. Five applications of this spray brought about a reduction of 81 per cent in the fly population in Navel orange trees within two months as shown by the trap records. The results of spraying on grapefruit as shown by the reduction in fly population are given in Table 1.

It is noticeable from this table that a reduction in fly population of as much as 90 per cent was obtained in some cases. Inasmuch as these sprayed plots were in close proximity to unsprayed trees heavily infested with fruit fly and that flies might migrate into the sprayed plots, the reduction in population indicates that effective control may be obtained by this method.

This spray for fruit flies is a poisoned food which will be sucked up from the surface of the foliage or fruit and contains a sweet material along with the poison to make it attractive to the flies so that they will eat it. Molasses has been used in the experimental work but it was found to be objectionable when applied to the trees and granulated sugar was substituted. For commercial groves,

the spraying should be started as soon as the adult flies appear and continued at intervals of approximately 10 days to two weeks if no rain occurs. The trees should, however, be sprayed immediately after a rain as soon as they dry off as the spray mixture is soluble and can be readily washed off by rain.

REDUCTION IN POPULATION ON BLOCK OF GRAPEFRUIT SPRAYED
WITH 4 POUNDS OF TARTAR EMETIC, 20 POUNDS SUGAR IN 100 GALS.

Table 1

Date Spray Applied	Number of Gallons Used	Period of Trap Record	Population Reduction Obtained	Dates on Which it Rained
Oct. 14	65 gals.	Oct. 15-20	90%	No rain
		Oct. 20-25	87%	No rain
		Oct. 25-30	78%	25th
Nov. 3	50 gals.	Nov. 4-11	74%	8, 9, 10
Nov. 13	43 gals.	Nov. 14-20	31%	14, 16
Nov. 16	50 gals.	Nov. 20-24	0%	16, 18, 19
Nov. 25	42 gals.	Nov. 26-Dec. 2	0%	25, 30
Dec. 5	50 gals.	Dec. 6-11	23%	11
Dec. 12	53 Gals.	Dec. 11-17	39%	13, 14
Dec. 21	45 gals.	Dec. 22-28	0%	Dripping dew
Dec. 29	50 gals.	Dec. 28-Jan. 2	45%	No rain
Jan. 6	60 gals.	Jan. 2-8	62%	3, 4, 5
Jan. 12	50 gals.	Jan. 8-15	74%	No rain
		Jan. 15-21	86%	No rain
Jan. 25	50 gals.	Jan. 21-27	57%	26, 27
		Jan. 27-Feb. 1	12%	27, 28, 31, Feb. 1
Feb. 5	55 gals.	Feb. 6-13	0%	10, 11
Feb. 12	45 gals.			
Feb. 18	42 gals.	Feb. 13-19	50%	18
Feb. 20	46 gals.	Feb. 19-25	61%	No rain
		Feb. 25-Mar. 3	66%	No rain
Mar. 5	42 gals.	Mar. 3-9	14%	4, 5, 7, 8, 9
Mar. 10	50 gals.	Mar. 11-17	18%	No rain
Mar. 22	45 gals.	Mar. 17-23	64%	18, 20, 21, 22
Mar. 25	75 gals.	Mar. 23-30	76%	No rain

The spray should be applied as a fine mist with a power sprayer so that the leaves in the interior of the tree are sprayed as the adult fly prefers shade to the sunlight.

The cost of the tartar emetic, technical grade, is from 26-3/4¢ to 30¢ per pound and the cost of the granulated sugar will vary with the locality and quantity purchased. Both compounds are readily soluble in water but should be dissolved before they are mixed in the spray tank and sufficient water added to make the required quantity of spray mixture. A sprayer with sufficient power to develop a fine mist should be used.

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1. The first part of the paper is devoted to a general
discussion of the problem. It is shown that the
problem is of great importance and that it has
not been completely solved. The author then
presents his own solution and shows that it is
correct. The second part of the paper is devoted
to a detailed discussion of the problem. It is
shown that the problem is of great importance
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